

DW89NC Single-Head Hydraulic Pipe Bending Machine Specification

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Thank you for purchasing our products. Please read through the operation manuals before you operate the machine so as to operate it more conveniently and produce better products.

NOTICE: Please confirm the voltage before starting. The machine default voltage is 3 phase 440V voltage and QF3 is in the on state. Using of 3 phase 220V voltage, please break the QF3, connect QF2, and change the motor wiring.

I . Attentions

1. Make sure the machine is electrically connected to ground before operation.
2. It is strictly prohibited to enter into the operating space when the machine is running.
3. The operator should stand within the range where he can touch the crash stop switch.
4. The machine must be operated by the professional operator who is trained to safely and correctly use this machine within the parameters and technical specifications for which it was designed.
5. Make the power off immediately whenever the machine has failure.
6. Keep the machine and surroundings clean and free of obstructions.
7. For the purpose of safety, power off when install and commissioning the module.
8. When the machine is operated in automatic mode, make sure all the data is set correctly.
9. Check the oil dipstick before operating, and maintain the oil level above 2/3.
10. Install the machine on a sound ground and correct the level for more stability.
11. Check rotating direction of the motor. If the direction is not correct, adjust the power supply wiring.
12. Make sure the machine is located, leveled on the flat ground before operation.

Safety Knowledge

1. Avoid hazardous environments, especially wet or damp locations.

2. Ensure the electrical installation is correctly. It had better make the power supply cable protected by rigid conduit to avoid damage.
3. Make sure all the guards are in position and all access doors are closed before operation.
4. Better use the standard tools and accessories; use improper equipment or exceeding the rated capacity will be dangerous.
5. Make the moving parts be kept properly aligned and adjusted. Inspect the machine everyday and take care any defects before starting work.
6. Pay attention to the machine while running unless it is in a controlled access area.
7. Wear the eye protection when operating the machine.
8. Cut off the power during maintenance and cleaning the machine.
9. Do not operate the machine if when it is faulty or parts are missing.
10. Test the emergency stop button on schedule.

II .Description

DW series of semi-automatic hydraulic pipe bending machines are developed by our company on the basis of introducing advanced technology abroad. It is controlled by micro-computer and driven hydraulically. It is of man-machine dialogue-type operation, with simple setting and input. Hand-operated or automatic mode can be randomly selected and be automatically changed over. The Movable foot switch is of two kinds of function, i.e. starting, crash stop. It is of high safety and of counter function. Multiple pipes with small diameter can be bent and formed once. And it has stable performance and high pipe-bending efficiency, and is ideal equipment in pipe-manufacturing industry.

III. Technical specification

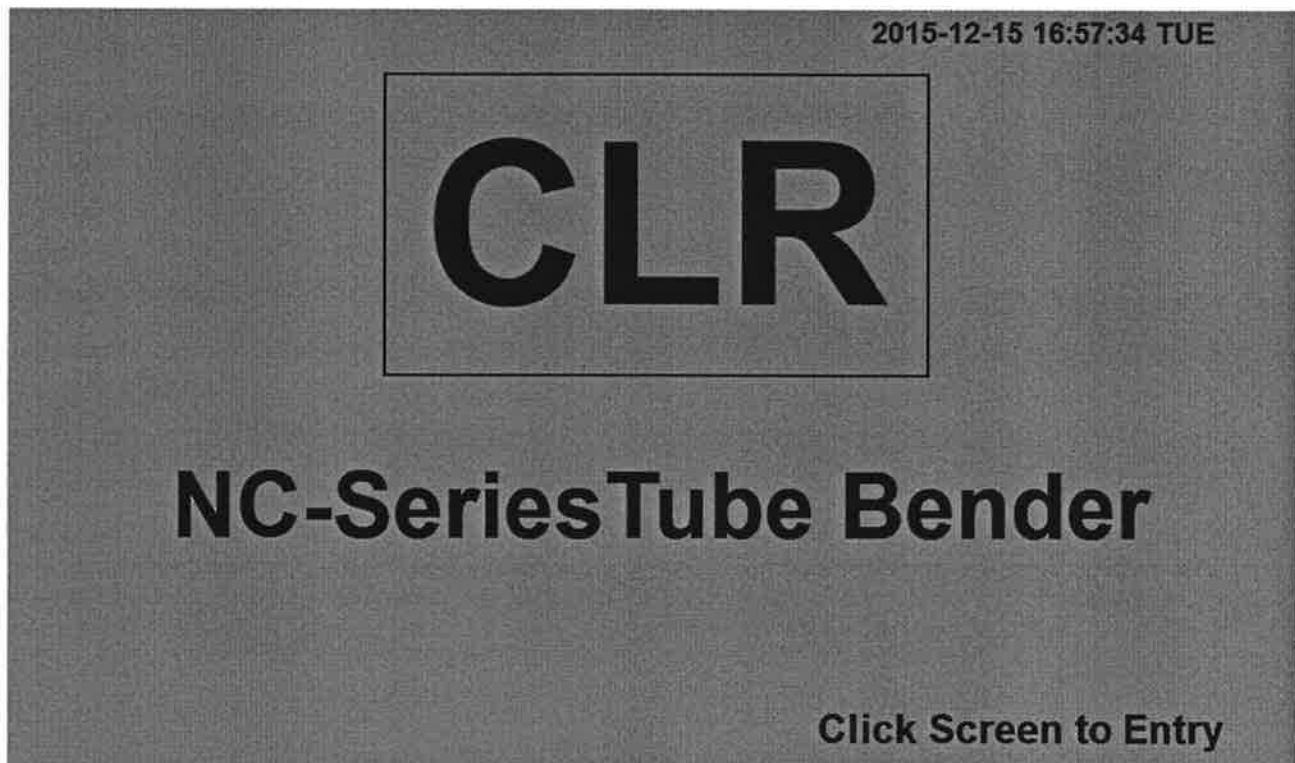
1. Max bending capacity: $\Phi 89^* 8\text{mm}$
2. Min bending radius: according to pipe diameter

3. Max bending radius: R450mm
4. Max bending angle: 185°
6. Motor power: 15 kw
7. System pressure: 14MPa
8. Recommend machine oil: hydraulic oil YA-N46.

IV. Operation procedure

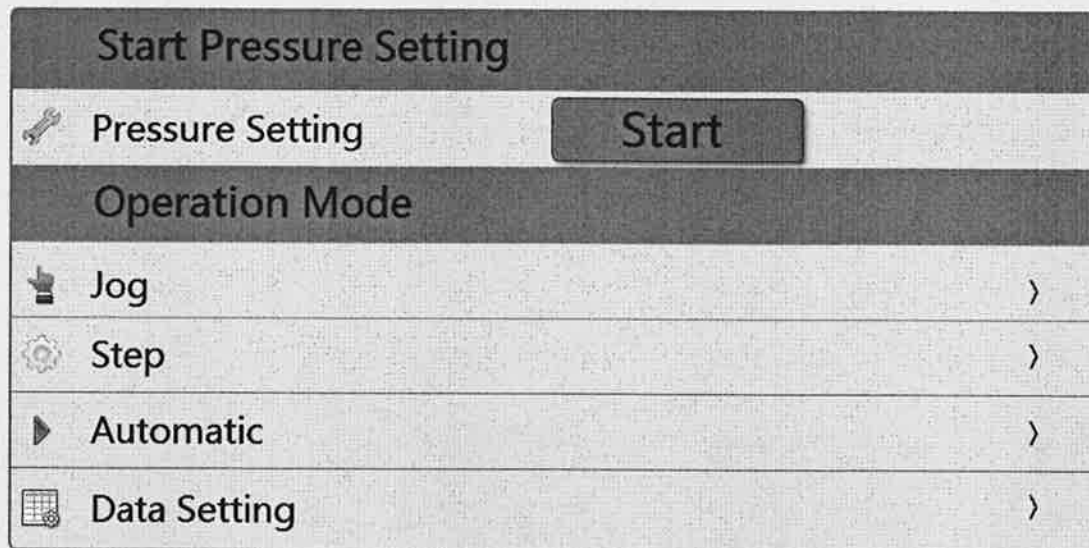
Panel description

After the controller is powered up, the boot interface is shown as follows:



Click the boot interface, then enter the function select interface:

Function Select



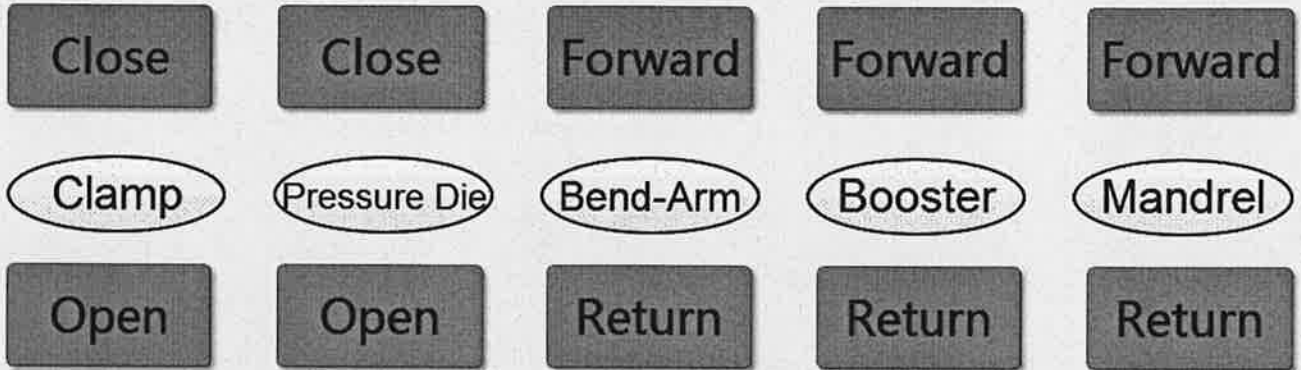
1. Click the pressure setting, and click the start, then the pressure output (relief valve Y9), one minute after the automatic shutdown;
2. Click jog, then enter the jog operation interface;
3. Click step then enter the step operation interface;
4. Click automatically then enter the automatic operation interface;
5. Click setting then enter the setting interface;

Jog operation interface

Jog Mode

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Part No.	Total Bend:	Setting Angle:	degree	Mandrel <input checked="" type="checkbox"/>	Booster <input checked="" type="checkbox"/>
	Current Bend: <input type="text"/>	Actual Angle:	degree	State:	



Jog operation process as follows:

Clamp open

When click clamp open, the main clamp valve output, releasing button turns off the output.

Long press the clamp open , the main clamp sensor X7 is in connection, releasing the button turns off the output.

NOTE: If there is booster and the booster back into place (not in place then prompt detection of booster return sensor), can allow the clamp valve output.

Clamp close

Click the clamp close, the main clamp close valve output, releasing button turns off the output.

Long press the clamp close, the main clamp close sensor X8 is in connection, releasing the button to turn on or turn off an output.

Pressure-die open

Click the pressure-die open, the pressure die valve output, releasing button turns off the output.

Long press the pressure-die open, the pressure die sensor X9 is in connection, releasing button turns off the output.

NOTE: If there is booster and the booster back into place (not in place then prompt detection of booster return sensor), can allow the clamp valve output.

Pressure-die close

Click the pressure-die close, the pressure die close valve output, releasing button turns off the output.

Long press the pressure-die close, the main clamp close sensor X10 is in connection, releasing button turns off the output.

Booster forward

When click the booster forward, if the actual bending angle is greater than 90 degrees, and repeat the booster sensor X5 is not connected, the booster forward valve output, releasing button turns off the output.

Long press the booster forward, if the actual bending angle is greater than 90 degrees, and repeat the booster sensor X5 is not connected, the booster forward valve output, booster sensor X5 is in connection or releasing button turns off the output.

Booster return

When click the booster return, the booster return sensor X4 is not connected, booster return valve output, releasing the button turns off the output.

Long press the booster return, the booster return sensor X4 is not connected, the booster valve output. The booster return sensor X4 is in connection or releasing the button then turn off the output.

Mandrel forward

Click the mandrel forward, mandrel forward valve output, releasing the button turns off the output.

Long press the mandrel forward, mandrel forward position sensor X12 in connection or releasing the button turn off the output.

Mandrel return

Click the mandrel return, mandrel return valve output, releasing the button turns off the output.

Long press the mandrel return, mandrel return position sensor X11 in connection or releasing the button turn off the output.

Note 1:

1. Mandrel return speed is selected for speed 1, only Y6 output when mandrel return.
2. Manual operation without mandrel early out action, only automatic mode has mandrel early out action.
3. Mandrel return buffer speed is selected for speed 3, Y6 and Y13 output at the same time when mandrel early out

Bend-arm forward

Click the bend-arm forward, bend-arm valve output, releasing the button turns off the output.

Long press the bend-arm forward, actual bending angle reaching the set or releasing the button turns off the output.

Note 1: when actual bending angle reaches the bend buffer angle, then switch to the bend buffer output.

Note 2: booster forward without output in the bending process.

Bend-arm return

Click the bend-arm return, bend-arm return valve output, releasing the button turns off the output.

Long press the bend-arm return, bend-arm return position sensor X3 in the connection or releasing the button turns off the output.

Note: if has booster, only booster return sensor X4 in connection is allowed to bend-arm return output.

Step operation interface

Step Mode

Part No.	Total Bend:	Setting Angle:	degree	Mandrel <input checked="" type="checkbox"/>	Booster <input checked="" type="checkbox"/>
	Current Bend: <input style="width: 50px;" type="text"/>	Actual Angle:	degree	State:	

Step operation process as follows:

Before entering the step mode, make sure in jog mode every movement was normal, especially encoder must work to prevent bending out of control.

Clicking the upper right corner “back” button can be forced to close all the output and return to the system menu interface.

Clamp open

Click clamp open, the main clamp output, until the main clamp sensor X7 in connection then turns off output.

Clamp close

Click clamp close, the main clamp close output, until the main clamp close sensor X8 in connection then turns off output.

Note: after clicking main clamp close, delay 0.5 seconds then start booster return.

Pressure-die open

Click pressure-die open, then pressure die output, until the pressure die sensor X9 in connection then turns off output.

Note: if has booster, only booster return in place, main clamp can have output.

Pressure-die close

Click pressure die close, then pressure die close output, until the pressure die close sensor X10 in connection then turns off output.

Mandrel forward

Click mandrel forward, then mandrel forward output, until mandrel in place sensor X12 in connection then turns off output.

Mandrel return

Click mandrel return, then mandrel return output, until mandrel position sensor X11 in connection then turns off output.

Bend arm forward

Click bend arm forward, then bend arm output, until actual bending angle reaches setting angle then turns off output.

Note: if has booster, booster and bend-arm output at the same time. Actual bending angle reaches bend buffer then switch to bend buffer output.

Bend arm return

Click bend arm return, then bend arm return output, until bend arm sensor X3 in connection then turns off output.

Note: if has booster, start booster return first, until booster return sensor X4 in connection can allow to bend-arm return output.

Automatic operation interface

Automatic Mode

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Part No.	Setting Quantity:	Current Quantity:	Mandrel <input checked="" type="checkbox"/>	Booster <input checked="" type="checkbox"/>
	Total bend Quantity:	Setting Angle: degree	Mandrel lubrication <input checked="" type="checkbox"/>	
	Current Bend Quantity:	Actual Angle: degree	State:	





Stop

In the process of automatic operation, if presses stop button, then system will shutdown all outputs, and jump to system setting interface.

Part number list interface:

Part Number List

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Part No.					Other Choice
1 	7	13	19	25	Help
2 	8	14	20	26	
3	9	15	21	27	Advanced
4	10	16	22	28	
5	11	17	23	29	Language  
6	12	18	24	30	

Operation as follows:

Current part number if they are edited, then corresponding button will appear small blue icon in the lower right corner, unedited part number has no small blue icon. The part number of current machine will be in deep blue button icon display, the user last edited part recipe default as current using recipe.

Click “help” button, then into “self - diagnoses” interface.

Click “Chinese flag” icon, system language will be changed into simplified Chinese; click “British flag” icon, system language will be changed to English.

Self –diagnoses interface

Self diagnoses

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Input Status				Output Status					
X1	Pedal Switch	X7	Clamp	Y1	Clamp	Y9	Overflow Valve	Y17	Mandrel Lubrication
X2	Pedal Switch Pause	X8	Clamp Return	Y2	Clamp Return	Y10	Pressure Die Clamp		
X3	Bending Return	X9	Pressure Die Clamp	Y3	Booster Forward	Y11	Pressure Die Return		
X4	Booster Return	X10	Pressure Die Return	Y4	Booster Return	Y12	Bend Buffer		
X5	Booster Repeated	X11	Mandrel Origin Position	Y5	Mandrel Forward	Y13	Mandrel Return Buffer		
X6	High Pressyre Block	X12	Mandrel in place	Y6	Mandrel Return	Y14	Yellow Indicate Led		
A	EncoderA Phase			Y7	Bending	Y15	Green Indicate Led		
B	Encoder B Phase			Y8	Bending Return	Y16	Red Indicate Led		

Part setting interface

Part No.						
Bend Qty	Degree(0~185°)	Bend Qty	Degree (0~185°)	Bend Quantity	<input type="text"/>	(1~10)
①	<input type="text"/>	⑥	<input type="text"/>	Part Production Qty	<input type="text"/>	(1~65000)
②	<input type="text"/>	⑦	<input type="text"/>	Processed Quantity	<input type="text"/>	(0~65000)
③	<input type="text"/>	⑧	<input type="text"/>	Bend Buffer	<input type="text"/>	(0°~20°)
④	<input type="text"/>	⑨	<input type="text"/>	Bend Return Buffer	<input type="text"/>	(0°~185°)
⑤	<input type="text"/>	⑩	<input type="text"/>	Mandrel Early Out	<input type="text"/>	(0°~20°)
Mandrel Choice	With Mandrel <input checked="" type="radio"/>		Without Mandrel <input type="radio"/>			
Booster Choice	With Booster <input checked="" type="radio"/>		Without Booster <input type="radio"/>			
Lubrication Choice	Lubricate <input checked="" type="radio"/>	No Lubricate <input type="radio"/>	Stop Lubricate Degree	<input type="text"/>	(0°~50°)	

Part production quantity, processed quantity, mandrel choice and lubrication choice are public parameters, other parameters are unique to each recipe.

V. Commissioning and die mounting

1. Fill up the oil tank
2. Connect power source 380V (according to your requirement)
3. Press “Start” button
4. Select the working mode to enter into the corresponding operation.
5. Adjust the overflow to ensure appropriate system pressure.
6. Adjust fixture: after mounting the die, adjust the fixture to ensure the upper clamping die is the same height as the bending wheel.
7. Adjust pressing die: move the pressing die backwards properly. The distance from the bending wheel should be more than the pulley travel. Then manually clamp the pipe to be in place. And adjust the pressing die upwards to press the bending wheel.
8. Adjust opening shift: loosen the locking bolt, rotate the hand wheel to adjust the opening shift up to the desired opening. But rebounding should be less than the working opening-shift.
9. Adjust pressure of the overflow valve: Keep pressing any manual button, and the pressure displayed on the pressure meter is that of the overflow valve. Adjust the handle up to the desired pressure.

VI. Failure analysis

Failure	Cause	Solution
After pressing "Start" button of the motor, the motor does not run, and no oil comes out of the pump	The motor reverses	Change power supply wiring
In working state, the system pressure is too slow. Oil cylinder does not work or abnormally	1. Filter or pipeline 2. Overflow valve core stuck	1. Cleaning up blocking 2. Check overflow valve
The system pressure is normal, but the oil cylinder does not work, or slow, or not in place	1. Solenoid valve stuck, not in place. 2. Opening of throttle valve too small	1. Check solenoid valve 2. Adjust throttle valve
Severe pressure fluctuation, abnormal noise induced and oil cylinder inflexible	1. Air enters into the system and oil level is too low 2. Oil cylinder scuffed	1. Add hydraulic oil 2. Repair oil cylinder 3. Check connector of electrical equipment
Some operation does not function.	1. The related solenoid valve stuck 2. The related solenoid valve malfunctions	1. Check the solenoid valve 2. Check electrical wiring
Working speed slow and no pressure	1. Low pressure of overflow valve 2. Sealing damaged	1. Adjust pressure of overflow valve 2. Replace sealing

Note: To check if the solenoid valve is stuck, push the valve core through check holes at both sides of the solenoid valve. If the valve core moves forwards and resets after removing pushing force, it is proved that the solenoid valve has not been stuck, otherwise stuck (check both sides).

VII. Quality certificate

Type:
No.

Work group:

The product has been inspected and qualified and is permitted to deliver

Inspection stamp

Date: yy/mm/dd

Note:

The quality certificate will take effect after making inspection stamp and signed /stamped by the inspector.

VIII. Maintenance sheet

Date	Description	Spare parts replaced	Reason	Remarks

Note: The maintenance sheet must be filled out and signed by the maintenance personnel of our company. Our company will be responsible for maintenance if without the sheet. If the sheet is lost, please immediately contact our company.